

## What is claimed is:

1. A process for dispersing a pigment for a paint, printing ink or pigment paste which comprises adding to the pigment co-polymer based on oxyalkyleneglycol-alkylenyl ethers and unsaturated dicarboxylic acid derivatives comprising:

-a) ------from-about-10-to-about-90-mol% of structural groups of the formula

Ia and/or Ib

5

10 where

M = hydrogen, monovalent or divalent metal cation, ammonium ion, organic amine radical,

a = 1 or, if M is a divalent metal cation, is 1/2,

$$X = OM_a \text{ or } -O-(C_mH_{\underline{lm}}O)_n-(C_mH_{\underline{lm}}O)_o-R^1$$

15 where

R<sup>1</sup> = is H, an aliphatic hydrocarbon radical, a cycloaliphatic hydrocarbon, an aryl radical which is unsubstituted or substituted,

l = 1 or 2,

m = 2 to 18,

20 the index on the hydrogen atom being formed by the product of l and m, and

n = 0 to 100, and

o = 0 to 100,

$$R^2 = R^1$$
 or -CO-NH<sub>2</sub> and also

$$-Q^{1}N - Q^{2} - NQ^{3}Q^{4}$$
, where

DOBETSEL OLDSO

10

15

20

Q<sup>1</sup> is a hydrogen atom or a monovalent hydrocarbon radical;

Q<sup>3</sup> and Q<sup>4</sup> are aliphatic and/or alicyclic alkyl radicals; and

unoxidized or oxidized to  $-Q^1N - Q^2 - N^{(+)}O^{(-)}Q^3Q^4$ ,

 $Y = O, NR^2, R^2$  being as defined above, or

b) from about 1 to about 89 mol% of structural groups of the formula IIa or IIb

$$-CH_{2} - CR^{3} -$$

$$| (CH_{2})_{p} - O - (C_{m}H_{lm}O)_{n} - (C_{m}H_{lm}O)_{o}-R^{1}$$
IIa

Ilb

 $R^3 = H$ , aliphatic hydrocarbon radical,

$$p = 0 \text{ to } 3$$
,

$$q = 0 \text{ to } 6, t = 0 \text{ to } 3, \text{ and }$$

R<sup>1</sup> and l, m, n and o are as defined above,

c) about 0.1 to about 10 mol% structural groups of the formula IIIa or IIIb

5

Шa

ШЬ

where

$$R^4 = H, CH_3$$

$$S = -H, -COOM_a, -COOR^5$$

10

DOSEY CHOSON

where  $R^5$  = aliphatic hydrocarbon radical,

cycloaliphatic hydrocarbon radical,

aryl radical

$$T = -U^{l}-O-(C_{m}H_{lm}O)_{n}-(C_{m}H_{lm}O)_{o}-R^{6}$$

where 
$$l = 1$$
 or 2,  $m = 2$  to 18, and

15

$$n = 0$$
 to 100 and  $o = 0$  to 100,

$$U^1 = -CO - NH-, -O-, -CH_2O-,$$

$$R^6 = R^1, -CH_2-CH-U^2-C=CH$$

| |

 $R^4$   $R^4$  S

20

where  $U^2 = -NH - CO_{-}, -O_{-}, -OCH_2, -W - R^7$ , where

$$W = \begin{bmatrix} CH_3 \\ Si - O \end{bmatrix} & CH_3 \\ Si - \begin{bmatrix} CH_3 \\ Si - CH_3 \end{bmatrix} & CH_3 \\ CH_3 & CH_3 \end{bmatrix}$$

$$r = 2 \text{ to } 100$$

$$-(CH_2)_Z - V - (CH_2)_Z - CH = CH - R^1, \mbox{ where}$$
 
$$20 \qquad V = -O - CO - C_6H_4 - CO - O - or - W -,$$

$$-COOR^5$$
 in the case of  $S = -COOR^5$  or  $COOM_a$ ,

and

$$V = -O - CO - C_6H_4 - CO - O - or - W,$$

the ligands and indices each being as defined above.

- 2. The method according to claim 1, wherein the copolymers comprise
  - a) from 10 to 90 mol% of structural groups of the formula Ia and/or Ib

where

10

5

M = hydrogen, monovalent or divalent metal cation, ammonium ion, organic amine radical,

a = 1 or, if M is a divalent metal cation, is 1/2,

 $X = -OM_a \text{ or } -O-(C_mH_{lm}O)_n-(C_mH_{lm}O)_o-R^1,$ 

where

15

R<sup>1</sup> = is H, an aliphatic hydrocarbon radical having 1 to 20 carbon atoms, a cycloaliphatic hydrocarbon having 5 to 8 carbon atoms, an aryl radical having 6 to 14 carbon atoms which is unsubstituted or substituted,

l = 1 or 2,

20 m = 2 to 18,

the index on the hydrogen atom being formed by the product of l and m, and

n = 0 to 100, and

o = 0 to 100,

 $-NHR^2$  and/or  $-NR_2^2$  where

## $R^2 = R^1$ or $-CO-NH_2$ and also

$$-Q^{1}N - Q^{2} - NQ^{3}Q^{4}$$
, where

Q1 is a hydrogen atom or a monovalent hydrocarbon radical

having 1 to 24 carbon atoms,

Q<sup>2</sup> is a divalent alkylene radical having 2 to 24 carbon atoms,

Q<sup>3</sup> and Q<sup>4</sup> are aliphatic and/or alicyclic

alkyl radicals having 1 to 12 carbon atoms, and  $% \left( 1\right) =\left( 1\right) \left( 1\right$ 

unoxidized or oxidized to  $-Q^1N - Q^2 - N^{(+)}O^{(-)}Q^3Q^4$ ,

10

 $Y = O, NR^2, R^2$  being as defined above, or  $N-Q^2-NQ^3Q^+$ 

where

Q<sup>2</sup>, Q<sup>3</sup> and Q<sup>4</sup> being as defined above,

15

DOBLYSKY DUDENI

b) from 1 to 89 mol% of structural groups of the formula IIa or IIb

$$(CH_2)_p - O - (C_mH_{lm}O)_n - (C_mH_{lm}O)_o - R^1$$

IIa

20

$$-CH_2 - CR^3 -$$

$$| \\ O - ((CH_2)_{g} - O)_{t} - (C_mH_{lm}O)_{n} - (C_mH_{lm}O)_{o}-R^1$$

25

Πb

in which

 $R^3 = H$ , aliphatic hydrocarbon radical having 1 to 5 carbon atoms,

$$p = 0 \text{ to } 3,$$

$$q = 0 \text{ to } 6, t = 0 \text{ to } 3, \text{ and }$$

R<sup>1</sup> and l, m, n and o are as defined above,

c) 0.1 to 10 mol% structural groups of the formula IIIa or IIIb

10

5

where

$$R^4 = H, CH_3$$

15  $S = -H, -COOM_a, -COOR^5$ 

where  $R^5$  = aliphatic hydrocarbon radical having 3 to 20 carbon atoms, cycloaliphatic hydrocarbon radical having 5 to 8 carbon atoms, aryl radical having 6 to 14 carbon atoms

$$T = -U^{1}-O-(C_{m}H_{lm}O)_{n}-(C_{m}H_{lm}O)_{o}-R^{6}$$
 where  $l = 1$  or  $2$ ,  $m = 2$  to  $18$ , and 
$$n = 0 \text{ to } 100 \text{ and } o = 0 \text{ to } 100,$$
 
$$U^{1} = -CO-NH-, -O-, -CH_{2}O-,$$

$$R^6 = R^1$$
,  $-CH_2 - CH - U^2 - C = CH$ 

$$R^4 \qquad R^4 \qquad S$$

where  $U^2 = -NH - CO_{-}, -O_{-}, -OCH_2, -W - R^7$ , where

$$W = \begin{bmatrix} CH_3 \\ I \\ Si - O \\ CH_3 \end{bmatrix}_r \begin{bmatrix} CH_3 \\ I \\ CH_3 \end{bmatrix}_r$$

10

5

r = 2 to 100

15

$$R^7 = R^1$$
,  $-[(CH_2)_3 - NH]_{s}^{-CO-C} = CH_{R^4}^{-CO-C} = CH_{2_z}^{-O-CO-C} = CH_{R^4}^{-CO-C} = CH_$ 

s = 1 or 2

z = 0 to 4,

$$-\text{CO-}[\text{NH-}(\text{CH}_2)_3]_s$$
 W- R<sup>7</sup>

$$-CO - O - (CH_2)_z - W - R^7$$

$$-(CH_2)_Z - V - (CH_2)_Z - CH = CH - R^1$$
, where 
$$V = -O - CO - C_6H_4 - CO - O - or - W -,$$

$$-COOR^{5}$$
 in the case of  $S = -COOR^{5}$  or  $COOM_{a}$ ,

and

5

10

15

20

$$V = -O - CO - C_6H_4 - CO - O - or - W,$$

the ligands and indices each being as defined above;

- 3. The method according to claim 1, where, in the copolymers, up to about 50 mol%, based on the sum of a structural groups a), b) and c), of components, the monomers of which are vinyl, acrylic acid or methacrylic acid.
- 4. The method according to claim 1, where, in the copolymers, up to about 20 mol%, based on the sum of structural groups a), b) and c), of components, the monomers of which are vinyl, acrylic acid or methacrylic acid.
- 5. The method according to claim 1, where the copolymers comprise about 40 to about 55 mol% of a component of formula Ia and Ib; about 40 to about 55 mol% of a component of formula II; and from about 0.1 to about 5 mole% of a component of formula III or IIIb.
- 6. The method according to claim 1, where the copolymers comprise a component of structural formula Ia and/or Ib which is a dicarboxylic acid derivative containing at least one amino oxide group.
- 7. The method according to claim 1, where the copolymers comprise a component of structural formula IIIa and/or IIIb which are obtained by a process comprising vinyl-type polysiloxane compounds.
  - 8. A dispersed pigment obtained by the process according to claim 1.
- 9. A printing ink, paint or pigment paste which comprises a dispersed pigment according to claim 8.
  - 10. An aqueous pigment concentrate which comprises

25 – a pigment;

- a copolymer based on oxyalkylenealkylglycol-alkylene ethers and

unsaturated dicarboxylic acid derivative comprising

a) from about 10 to about 90 mol% of structural groups of the formula Ia and/or Ib

where

10

M = hydrogen, monovalent or divalent metal cation, ammonium ion, organic amine radical,

a =

1 or, if M is a divalent metal cation, is 1/2,

 $\sqrt{\sim}$  X:

 $-OM_a$  or  $-O-(C_mH_{lm}O)_n-(C_mH_{lm}O)_o-R^1$ ,

where

15

20

 $R^{1}$  = is H, an aliphatic hydrocarbon radical; a cycloaliphatic hydrocarbon;

an aryl radical which is unsubstituted or substituted.

$$l = 1 \text{ or } 2,$$

$$m = 2 \text{ to } 18,$$

the index on the hydrogen atom being formed by the product of l and m, and

n = 0 to 100, and

$$o = 0$$
 to 100,

- NHR<sup>2</sup> and/or - NR<sup>2</sup><sub>2</sub> where  

$$R^2 = R^1$$
 or -CO-NH<sub>2</sub> and also

$$-Q^1N - Q^2 - NQ^3Q^4$$
, where

Q<sup>1</sup> is a hydrogen atom or a monovalent hydrocarbon radical;

Q<sup>2</sup> is a divalent alkylene radical;

 $\boldsymbol{Q}^3$  and  $\boldsymbol{Q}^4$  are aliphatic and/or alicyclic alkyl radicals, and

unoxidized or oxidized to  $-Q^1N - Q^2 - N^{(+)}O^{(-)}Q^3Q^4$ ,

5

Y=

= O,  $NR^2$ ,  $R^2$  being as defined above, or  $N-Q^2-NQ^3Q^4$ ,

where

Q<sup>2</sup>, Q<sup>3</sup> and Q<sup>4</sup> being as defined above,

b) from about 1 to about 89 mol% of structural groups of the formula IIa or IIb

15

CORUTABL CULT

 $-CH_2 - CR^3 -$ 

$$(CH_2)_p - O - (C_mH_{lm}O)_n - (C_mH_{lm}O)_o - R^1$$

IIa

20

 $-CH_2 - CR^3 | O - ((CH_2)_q - O)_t - (C_mH_{lm}O)_n - (C_mH_{lm}O)_o - R^1$ 

Πb

25

in which

R<sup>3</sup> = H, aliphatic hydrocarbon radical,

$$p = 0 \text{ to } 3$$
,

$$q = 0 \text{ to } 6, t = 0 \text{ to } 3, \text{ and }$$

R<sup>1</sup> and l, m, n and o are as defined above,

about 0.1 to about 10 mol% structural groups of the formula IIIa or IIIb c)

10

Ша

Шb

where

$$R^4 = H, CH_3$$

15

$$S = -H, -COOM_a, -COOR^5$$

where  $R^5 =$  aliphatic hydrocarbon radical;

cycloaliphatic hydrocarbon radical;

aryl radical.

$$T = -U^{1} - O - (C_{m}H_{lm}O)_{n} - (C_{m}H_{lm}O)_{o} - R^{6}$$
 where  $l = 1$  or  $2$ ,  $m = 2$  to  $18$ , and 
$$n = 0 \text{ to } 100 \text{ and } o = 0 \text{ to } 100,$$
 
$$U^{1} = -CO - NH -, -O -, -CH_{2}O -,$$

$$R^6 = R^1$$
,  $-CH_2 - CH - U^2 - C = CH$ 

$$R^4 R^4 S$$

where 
$$U^2 = -NH - CO_{-}, -O_{-}, -OCH_2, -W - R^7$$
, where

$$W = \begin{bmatrix} CH_3 \\ Si - O \\ CH_3 \end{bmatrix} \begin{bmatrix} CH_3 \\ Si - \\ CH_3 \end{bmatrix}$$

5

$$r = 2 \text{ to } 100$$

OGHTZSS4 OHUSO1

$$R^7 = R^1$$
,  
 $- \left[ (CH_2)_3 - NH \right]_S^- CO - C = CH$   
 $- (CH_2)_2^- O - CO - C = CH$   
 $- R^4 S$ 

s = 1 or 2

$$z = 0 \text{ to } 4$$
,

$$-\text{CO-}[\text{NH-}(\text{CH}_2)_3]_{\text{s}}^{\text{-}} \text{W-R}^7$$

20

$$-CO-O-(CH_2)_Z-W-R^7$$

25

$$-(CH_2)_Z - V - (CH_2)_Z - CH = CH - R^1$$
, where  
 $V = -O - CO - C_6H_4 - CO - O - or - W -$ 

 $-COOR^{5}$  in the case of  $S = -COOR^{5}$  or  $COOM_{a}$ ,

and

$$V = -O - CO - C_6H_4 - CO - O - or - W,$$

the ligands and indices each being as defined above;

- -- water;
- -- optionally a co-solvent; and
- -- optionally an auxiliary.
- 11. The aqueous pigment concentrate according to claim 10, wherein a co solvent is present and it is a glycol ester or a glycol ester.
- 12. The aqueous pigment concentrate according to claim 10, wherein the copolymer based on oxyalkylenealkylglycol-alkylene and unsaturated dicarboxylic acid derivative comprises:
  - a) from 10 to 90 mol% of structural groups of the formula Ia and/or Ib

15

20

5

10

where

M = hydrogen, monovalent or divalent metal cation, ammonium ion, organic amine radical,

a = 1 or, if M is a divalent metal cation, is 1/2,

 $X = -OM_a \text{ or } -O-(C_mH_{lm}O)_n-(C_mH_{lm}O)_o-R^1,$  where

$R^1 =$	is H, an aliphatic hydrocarbon radical having 1 to 20 carbon atoms,
	a cycloaliphatic hydrocarbon having 5 to 8 carbon atoms, an aryl
	radical having 6 to 14 carbon atoms which is unsubstituted or
	substituted,

l =1 or 2, 5 2 to 18, m = the index on the hydrogen atom being formed by the product of l and m, and 0 to 100, and n = 0 to 100, o =DOSEVESH CHOSOL 10  $-NHR^2$  and/or  $-NR^2$ , where  $R^2 = R^1$  or -CO-NH<sub>2</sub> and also  $-Q^{1}N - Q^{2} - NQ^{3}Q^{4}$ , where  $Q^1$ is a hydrogen atom or a monovalent hydrocarbon radical 15 having 1 to 24 carbon atoms,  $O^2$ is a divalent alkylene radical having 2 to 24 carbon atoms, Q<sup>3</sup> and Q<sup>4</sup> are aliphatic and/or alicyclic alkyl radicals having 1 to 12 carbon atoms, and unoxidized or oxidized to  $-Q^1N - Q^2 - N^{(+)}O^{(-)}Q^3Q^4$ , 20 O, NR<sup>2</sup>, R<sup>2</sup> being as defined above, or N-Q<sup>2</sup>-NQ<sup>3</sup> Y =

Y =  $Q^4$ ,  $Q^2$ ,  $Q^3$  and  $Q^4$  being as defined above, or  $Q^4$ .

25

b) from 1 to 89 mol% of structural groups of the formula IIa or Iib

$$(CH_2)_p - O - (C_mH_{lm}O)_n - (C_mH_{lm}O)_o - R^1$$

IIa

5  $-CH_2 - CR^3 O - ((CH_2)_q - O)_t - (C_mH_{lm}O)_n - (C_mH_{lm}O)_o - R^1$ 

Пb

10

in which

 $R^3 = H$ , aliphatic hydrocarbon radical having 1 to 5 carbon atoms,

$$p = 0 \text{ to } 3,$$

15

q = 0 to 6, t = 0 to 3, and

R<sup>1</sup> and l, m, n and o are as defined above,

20

c) 0.1 to 10 mol% structural groups of the formula IIIa or IIIb

Ша

Шb

where

$$R^4 = H, CH_3$$

10

15

$$S = -H, -COOM_a, -COOR^5$$

where  $R^5 =$  aliphatic hydrocarbon radical having 3 to 20 carbon atoms, cycloaliphatic hydrocarbon radical having 5 to 8 carbon atoms, aryl radical having 6 to 14 carbon atoms

$$T = -U^{1}-O-(C_{m}H_{lm}O)_{n}-(C_{m}H_{lm}O)_{o}-R^{6}$$
where  $l = 1$  or  $2$ ,  $m = 2$  to  $18$ , and
$$n = 0 \text{ to } 100 \text{ and } o = 0 \text{ to } 100,$$

$$U^{1} = -CO-NH-, -O-, -CH_{2}O-,$$

$$R^6 = R^1$$
,  $-CH_2 - CH - U^2 - C = CH$ 

where  $U^2 = -NH - CO-, -O-, -OCH_2, -W-R^7$ , where

$$\mathbf{W} = \begin{bmatrix} \mathbf{CH_3} \\ \mathbf{Si-O} \\ \mathbf{CH_3} \end{bmatrix} \mathbf{CH_3}$$

$$\mathbf{CH_3} \\ \mathbf{CH_3} \end{bmatrix} \mathbf{CH_3}$$

r = 2 to 100

25
$$R^{7} = R^{1},$$

$$-\left[(CH_{2})_{3} - NH\right] - CO - C = CH$$

$$R^{4} S$$

$$-\left((CH_{2})_{2} - O - CO - C = CH\right)$$

$$R^{4} S$$

$$s = 1 \text{ or } 2$$
  
 $z = 0 \text{ to } 4$ ,  
 $-CO - \left[ NH - (CH_2)_3 \right]_s^{-} W - R^7$ 

$$-CO-O-(CH_2)_Z-W-R^7$$

$$-(CH_2)_Z - V - (CH_2)_Z - CH = CH - R^1$$
, where  
 $V = -O - CO - C_6H_4 - CO - O - or - W -$ ,

10

$$-COOR^5$$
 in the case of  $S = -COOR^5$  or  $COOM_a$ ,

and

$$V = -O - CO - C_6H_4 - CO - O - or - W,$$

the ligands and indices each being as defined above.

- 13. The aqueous pigment concentrate according to claim 10, which contains about 0.1 to about 200 % by weight of copolymers, based on the amount of pigment.
- 14. The aqueous pigment concentrate according to claim 10, wherein the pigment is an inorganic pigment.
- 20 15. The aqueous pigment concentrate according to claim 14, wherein the pigment is an iron oxide.
  - 16. The aqueous pigment concentrate according to claim 14, wherein the pigment is a transparent iron oxide.
- 17. A coating system which comprises an aqueous pigment concentrate according to claim 10 and an aqueous coating material.

- 18. The coating system according to claim 17, wherein the coating material is a one-component coating material which is based on alkyl, acrylate, epoxy, polyvinyl acetate, polyester or polyurethane resins.
- 19. The coating system according to claim 17, wherein the coating material is two-component coating material based on hydroxyl-containing polyacrylate\_or\_polyester\_ resins with melamine resins or optionally blocked polyisocyanate resins as cross linkers, or polyepoxide resins.
  - A pigment concentrate which comprises 20.
    - -- a pigment;
  - -- a copolymer based upon oxyalkylenealkylglycol-alkylene ethers and unsaturated dicarboxylic acid derivatives comprising:
- from about 10 to about 90 mol% of structural groups of the formula Ia a) and/or Ib

5

10

where

hydrogen, monovalent or divalent metal cation, ammonium ion, organic amine M =radical,

Ia.

1 or, if M is a divalent metal cation, is 1/2, 20  $-OM_a$  or  $-O-(C_mH_{lm}O)_n-(C_mH_{lm}O)_o-R^1$ ,

where



 $R^{1}$  = is H, an aliphatic hydrocarbon radical, a cycloaliphatic hydrocarbon, an aryl radical which is unsubstituted or substituted,

l = 1 or 2,

m = 2 to 18,

5 the index on the hydrogen atom being formed by the product of l and m, and

n = 0 to 100, and

o = 0 to 100,

 $-NHR^2$  and/or  $-NR^2_2$  where

 $R^2 = R^1$  or -CO-NH<sub>2</sub> and also

 $-Q^{1}N - Q^{2} - NQ^{3}Q^{4}$ , where

Q<sup>1</sup> is a hydrogen atom or a monovalent hydrocarbon radical;

Q<sup>2</sup> is a divalent alkylene radical;

 $Q^3$  and  $Q^4$  are aliphatic and/or alicyclic alkyl radicals; and unoxidized or oxidized to  $-Q^1N-Q^2-N^{(+)}O^{(-)}Q^3Q^4$ ,

Y = O,  $NR^2$ ,  $R^2$  being as defined above, or  $N-Q^2-NQ^3Q^4$ ,

where

Q<sup>2</sup>, Q<sup>3</sup> and Q<sup>4</sup> being as defined above,

b) from about 1 to about 89 mol% of structural groups of the formula IIa or IIb

$$-CH_2 - CR^3 -$$

$$| (CH_2)_p - O - (C_mH_{lm}O)_n - (C_mH_{lm}O)_o - R^1$$

IIa

10

Πb

in which

 $R^3 = H$ , aliphatic hydrocarbon radical,

$$p = 0 \text{ to } 3,$$

$$q = 0 \text{ to } 6, t = 0 \text{ to } 3, \text{ and }$$

R<sup>1</sup> and l, m, n and o are as defined above,

c) about 0.1 to about 10 mol% structural groups of the formula IIIa or IIIb

IIIa IIIb

15 where

$$R^4 = H, CH_3$$

$$S = -H, -COOM_a, -COOR^5$$

where  $R^5 =$  aliphatic hydrocarbon radical,

cycloaliphatic hydrocarbon radical,

20 aryl radical

$$T = -U^{1}-O-(C_{m}H_{lm}O)_{n}-(C_{m}H_{lm}O)_{o}-R^{6}$$
  
where  $l = 1$  or 2,  $m = 2$  to 18, and

n = 0 to 100 and o = 0 to 100,

$$U^1 = -CO - NH_{-}, -O_{-}, -CH_2O_{-},$$

$$R^6 = R^1$$
,  $-CH_2 - CH - U^2 - C = CH$ 

. 1

 $R^4$   $R^4$  S

where  $U^2 = -NH - CO_{-}, -O_{-}, -OCH_{2}, -W - R^7$ , where

W/ ---

$$\begin{bmatrix}
CH_3 \\
Si-O
\end{bmatrix}$$

$$CH_3 \\
Si-CH_3
\end{bmatrix}$$

$$CH_3$$

10

$$r = 2 \text{ to } 100$$

15

$$R^7 = R^1$$
,  
 $-[(CH_2)_3 - NH]_{S}^{-} CO - C = CH$   
 $-[(CH_2)_2 - O - CO - C = CH]_{R^4}^{-} S$ 

s = 1 or 2

$$z = 0$$
 to 4,

$$-\operatorname{CO-}[\operatorname{NH-(CH}_2)_3]_{\operatorname{s}}^{-}\operatorname{W-R}^7.$$

$$-CO - O - (CH_2)_Z - W - R^7$$

$$-(CH_2)_Z - V - (CH_2)_Z - CH = CH - R^1$$
, where 
$$V = -O - CO - C_6H_4 - CO - O - or - W -,$$

and

$$V = -O - CO - C_6H_4 - CO - O - or - W$$
,

the ligands and indices each being as defined above;

5

-- optionally, at least one solvent,

- -- optionally, an auxiliary.
- 21. A method for improving the resistance of a paint to weathering which comprises adding a pigment concentrate according to claim 20 to the paint.

10

DEDYSEL DEDENI

- 22. The pigment concentrate according to claim 20, which further comprises a water-dispensable polymer, which is a polyacylate, polyurethane, or a polysiloxane.
  - 23. An aqueous pigment concentrate comprising:
    - -- a pigment;

-- a copolymer obtained by polymerizing oxyalkyleneglycol-alkenyl ether monomers and unsaturated dicarboxylic acid derivatives comprising:

15

from about 10 to about 90 mol% of structural groups of the formula a) Ia and/or Ib

20

I a

Ib

where

hydrogen, monovalent or divalent metal cation, ammonium ion, organic amine M =radical,

a = 1 or, if M is a divalent metal cation, is 1/2,

$$X = -OM_a \text{ or } -O-(C_m H_{lm}O)_n - (C_m H_{lm}O)_o - R^1,$$

where ·

R<sup>1</sup> = is H, an aliphatic hydrocarbon radical a cycloaliphatic hydrocarbon, an aryl radical

-5----which-is-unsubstituted-or substituted,

$$l = 1 \text{ or } 2$$
,

$$m = 2 \text{ to } 18,$$

the index on the hydrogen atom being formed by the product of I and m, and

$$n = 0$$
 to 100, and

10 o = 0 to 100,

$$-NHR^2$$
 and/or  $-NR^2$ , where

$$R^2 = R^1$$
 or -CO-NH, and also

$$-Q^{1}N - Q^{2} - NQ^{3}Q^{4}$$
, where

Q<sup>1</sup> is a hydrogen atom or a monovalent hydrocarbon radical;

Q<sup>2</sup> is a divalent alkylene radical;

Q<sup>3</sup> and Q<sup>4</sup> are aliphatic and/or alicyclic

alkyl radicals; and

unoxidized or oxidized to  $-Q^1N - Q^2 - N^{(+)}O^{(-)}Q^3Q^4$ ,

 $Y = O, NR^2, R^2$  being as defined above, or  $N-Q^2-NQ^3Q^4$ ,

20 where

15

Q<sup>2</sup>, Q<sup>3</sup> and Q<sup>4</sup> being as defined above,

b) from about 1 to about 89 mol% of structural groups of the formula IIa or IIb

$$-CH_{2} - CR^{3} -$$

$$| (CH_{2})_{p} - O - (C_{m}H_{1m}O)_{n} - (C_{m}H_{1m}O)_{o}-R^{1}$$

$$IIa$$

10

15

Ilb

in which

 $R^3 = H$ , aliphatic hydrocarbon radical,

p = 0 to 3

q = 0 to 6, t = 0 to 3, and

R<sup>1</sup> and l, m, n and o are as defined above,

c) about 0.1 to about 10 mol% structural groups of the formula IIIa or

Шb

20

Ша

Шb

where

$$R^4 = H, CH_3$$

$$S = -H, -COOM_a, -COOR^5$$

where  $R^5 =$  aliphatic hydrocarbon radical;

cycloaliphatic hydrocarbon radical;

aryl radical.

$$\underline{T} = \underline{U^1 - O - (C_m H_{lm} O)_0 - (C_m H_{lm} O)_0 - R^6}$$

where l = 1 or 2, m = 2 to 18, and

n = 0 to 100 and o = 0 to 100,

$$U^{1} = -CO - NH_{-}, -O_{-}, -CH_{2}O_{-},$$

$$R^6 = R^1$$
,  $- CH_2 - CH - U^2 - C = CH$ 

1. 1.1

where 
$$U^2 = -NH - CO_{-}, -O_{-}, -OCH_2, -W-R^7$$
,

where

COMEZER OLICE

10

15

25

 $W = \begin{bmatrix} CH_3 \\ Si - O \\ CH_3 \end{bmatrix} \begin{bmatrix} CH_3 \\ Si - \\ CH_3 \end{bmatrix}$ 

r = 2 to 100

$$R^7 = R^1$$
,  
 $-[(CH_2)_3 - NH] - CO - C = CH$   
 $R^4 = S$   
 $-(CH_2)_2 - O - CO - C = CH$   
 $R^4 = S$ 

a = 1

$$s = 1 \text{ or } 2$$

20

$$z = 0 \text{ to } 4,$$
  
-CO- $\left[ \text{NH-(CH}_2)_3 \right]_s$  W- R<sup>7</sup>

5 
$$-CO-O-(CH_2)_Z-W-R^7$$

$$-(CH_2)_Z - V - (CH_2)_Z - CH = CH - R^1$$
, where  

$$V = -O - CO - C_6H_4 - CO - O - or - W -,$$

 $-COOR^{5} \text{ in the case of S} = -COOR^{5} \text{ or COOM}_{a},$ 

and

$$V = -O - CO - C_6H_4 - CO - O - or - W,$$

the ligands and indices each being as defined above

wherein the polymerization occurs in aqueous solution at a temperature of from about 20 to about 100°C in the presence of a free-radical initiator.

- -- water;
- -- optionally, a co-solvent; and
- -- optionally, an auxiliary.
- 24. A process for dispensing a pigment for a paint, printing ink or pigment paste which comprises adding to the pigment a co-polymer obtained by polymerizing oxyalkyleneglycol-alkylenyl ether and unsaturated dicarboxylic acid derivatives comprising:
  - a) from about 10 to about 90 mol% of structural groups of the formula
     Ia and/or Ib

Ιb

where

M = hydrogen, monovalent or divalent metal cation, ammonium ion, organic amine '

I a

5 radical,

a = 1 or, if M is a divalent metal cation, is 1/2,

 $X = -OM_a \text{ or } -O-(C_m H_{lm} O)_{n}-(C_m H_{lm} O)_{o}-R^1$ 

where

R<sup>1</sup> = is H, an aliphatic hydrocarbon radical a cycloaliphatic hydrocarbon, an aryl radical

which is unsubstituted or substituted,

l = 1 or 2,

m = 2 to 18,

the index on the hydrogen atom being formed by the product of l and m, and

n = 0 to 100, and

0 = 0 to 100,

 $-NHR^2$  and/or  $-NR^2$ 2 where

$$R^2 = R^1$$
 or  $-CO-NH_2$  and also

 $-Q^1N-Q^2-NQ^3Q^4$ , where

Q<sup>1</sup> is a hydrogen atom or a monovalent hydrocarbon radical;

Q<sup>2</sup> is a divalent alkylene radical;

Q<sup>3</sup> and Q<sup>4</sup> are aliphatic and/or alicyclic

alkyl radicals; and

## unoxidized or oxidized to $-Q^1N - Q^2 - N^{(+)}O^{(-)}Q^3Q^4$ ,

 $Y = O, NR^2, R^2$  being as defined above, or  $N-Q^2-NQ^3Q^4$ ,

where

Q<sup>2</sup>, Q<sup>3</sup> and Q<sup>4</sup> being as defined above,

b) from about 1 to about 89 mol% of structural groups of the formula IIa or IIb

$$-CH_{2} - CR^{3} - (CH_{2})_{p} - O - (C_{m}H_{lm}O)_{n} - (C_{m}H_{lm}O)_{o}-R^{1}$$

IIa

10

$$-CH_{2} - CR^{3} -$$

$$| \\ O - ((CH_{2})_{q} - O)_{t} - (C_{m}H_{lm}O)_{n} - (C_{m}H_{lm}O)_{o}-R^{1}$$

$$IIb$$

15

DOBDYSH THOSCI

in which

R<sup>3</sup> = H, aliphatic hydrocarbon radical,

p = 0 to 3,

20

q = 0 to 6, t = 0 to 3, and

R<sup>1</sup> and l, m, n and o are as defined above,

c) about 0.1 to about 10 mol% structural groups of the formula IIIa or IIIb

Ша

m

where

$$R^4 = H, CH_3$$

$$S = -H, -COOM_a, -COOR^5$$

where  $R^5 =$  aliphatic hydrocarbon radical;

cycloaliphatic hydrocarbon radical;

aryl radical,

$$T = -U^{1} - O - (C_{m}H_{lm}O)_{n} - (C_{m}H_{lm}O)_{o} - R^{6}$$

where l = 1 or 2, m = 2 to 18, and

n = 0 to 100 and o = 0 to 100,

$$U^1 = -CO - NH-, -O-, -CH_2O-,$$

$$R^6 = R^1$$
,  $-CH_2 - CH - U^2 - C = CH$ 

$$R^4 \qquad R^4 \qquad S$$

15

where 
$$U^2 = -NH - CO_{-}, -O_{-}, -OCH_2, -W-R^7$$

where

$$V = \begin{bmatrix} CH_3 \\ Si - O \\ CH_3 \end{bmatrix}_r CH_3$$

$$CH_3 CH_3$$

$$r = 2 \text{ to } 100$$

$$R^{7} = R^{1}, \qquad -\left[ (CH_{2})_{3} - NH \right] - CO - C = CH \\ R^{4} = S \\ - (CH_{2})_{2} - O - CO - C = CH \\ R^{4} = S \\ S = 1 \text{ or } 2 \\ Z = 0 \text{ to } 4, \\ - CO - \left[ NH - (CH_{2})_{3} \right]_{S} - W - R^{7} \\ - CO - O - (CH_{2})_{Z} - W - R^{7} \\ - CO - O - (CH_{2})_{Z} - W - R^{7} \\ - CO - O - (CH_{2})_{Z} - CH = CH - R^{1}, \text{ where} \\ V = - O - CO - C_{6}H_{4} - CO - O - \text{or } - W - COOM_{3}, \\ \text{and} \\ 20 \qquad V = - O - CO - C_{6}H_{4} - CO - O - \text{or } - W, \\ \end{array}$$

the ligands and indices each being as defined above

wherein the polymerization occurs in aqueous solution at a temperature of from about 20°C to about 100°C in the presence of a free-radical initiator.